

DISCUSSION GUIDE

A CONVERSATION ON NUCLEAR ENERGY

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On April 14, Nuclear Matters and Bloomberg BNA hosted “A Conversation on Nuclear Energy,” a panel discussion conducted during Bloomberg New Energy Finance’s three-day **Future of Energy Summit**, held in New York City. Panelists included former **Senator Judd Gregg (R-NH)**, Co-Chair, Nuclear Matters; **Michael Twomey**, VP, External Affairs, Entergy Corporation; **Gary Mignogna**, President and CEO, Areva Americas; **Mark Marano**, President – Americas, Westinghouse Electric Company; **Tom Blees**, Author, Prescription for the Planet; and **Chris Gadomski** (moderator), Lead Analyst, Nuclear, Bloomberg New Energy Finance.

Panelists conducted a wide-ranging discussion on the variety of challenges confronting nuclear plants, including the fact that 20% of the reactors in the United States face premature decommissioning, according to former Senator Judd Gregg, Co-Chair, Nuclear Matters. Key themes included: on-grid competition from non-nuclear producers, the important role nuclear producers play in maintaining grid reliability, the carbon reduction benefits of nuclear energy, reactor reliability, the cost-effectiveness of nuclear power, the untapped capacity levels of existing reactors and the coming generation of nuclear reactors.

Key takeaways from the session are included below.

ECONOMICS

The Vermont Yankee reactor had been online for 633 continuous days when it was closed in December of last year. With higher fixed costs and lower revenue due to declining natural gas prices, the economics were unsustainable. Vermont Yankee had to close despite the plant’s having received a 20-year license renewal. This dealt a major blow to the regional economy, with \$63 million in lost salaries and an estimated 50% increase in the cost of energy for Vermont Yankee’s former customers.

CO2 REDUCTION

Nuclear energy provides over 63% of America’s non-carbon emitting energy, especially critical at a time when global efforts to reduce carbon emissions have faced consistent obstacles. Fossil fuel-emitting sources often replace prematurely decommissioned nuclear plants, causing carbon emissions to rise. For example, Entergy’s Michael Twomey estimated that for the two months following the Vermont Yankee closure, 650,000 additional tons of CO2 were released into the atmosphere equivalent to 125,000 additional cars on the road. Said Twomey, “If you are genuinely concerned about carbon emissions... you should be adopting policies that avoid carbon emissions. It’s that simple.”

Gregg reported that both he and Evan Bayh, a former Governor and Senator from Indiana, shared the same concern when deciding to engage with Nuclear Matters. Gregg explained: “Already existing [nuclear] plants were being turned off before their useful life had run out. We didn’t think that was constructive for our economy or our environment.”



CREDITS AND INCENTIVES

The discussion turned to inconsistencies in the New England energy market that disadvantage nuclear power producers. “ISO New England’s generators are incentivized to make sure they can burn oil,” said Twomey. “Massachusetts had a clean energy standard proposal that would have paid a premium for so-called clean energy — excluding nuclear. You’ve got to adopt a set of policies that offers a competitive landscape with a technology-neutral opportunity for all plants that share the attributes these nuclear plants provide,” he concluded. “Energy markets should be competitive, and yet they are not.”

COST-COMPETITIVENESS

Few would argue with nuclear energy’s cost competitiveness on a cost-per-megawatt basis. Areva’s Gary Mignogna reported: “It’s more cost-effective than renewables and at least as cost-effective as combined cycle natural gas,” when compared to the nuclear industry’s top three quartiles. Interestingly, more than half of the total units in the U.S. have the capacity for power uprating. “If we got all of those reactors to top rate, it would be the equivalent of building eight to ten reactors,” said Mignogna.

TODAY’S REALITY

Despite economic challenges and divided public opinion, new reactors are being built in the United States. Westinghouse is building four AP1000 reactors — two in Georgia and two in South Carolina. But greater demand is coming from outside of the U.S. For example, Westinghouse is building four reactors in China — with even more in the pipeline. According to Mignogna, “Saudi Arabia announced they want to build sixteen units, Turkey wants to build eight units. India is going to be building more units. That’s an advantage to us here in the U.S. It creates jobs. It also enables us to deploy advanced technologies quicker here in the United States.”

On Small Modular Reactor design, “we’re proceeding along technically,” said Westinghouse’s Mark Marano. “But I think a lot of the major vendors and OEMs [original equipment manufacturers] realize that we’re going to see how the market develops, and [whether] the customer is willing to come and commit a bit more, rather than continuing to invest tens of millions of dollars, which would put a company’s balance sheet at risk.”

THE FUTURE OF NUCLEAR TECHNOLOGY

Author Tom Blees noted, “We’re not looking at the end of the era of light reactors any time soon. There are nuclear technologies [molten salt reactors, thorium reactors, prism reactors, etc.] that burn nuclear waste as fuel, and that can reduce the radio toxicity from thousands of years to a few hundred years — and in a form that is inert.” Blees added, “We’ve got enough depleted uranium already out of the ground to power the whole planet for almost 1,000 years.”



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